

# UNITED STATES SIGNAL SERVICE

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### INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for October, 1887, and is based upon reports of regular and voluntary observers of both countries. Descriptions of the storms which appeared over the north Atlantic Ocean during the month are also given, and their approximate paths shown on chart i, on which also appears the distribution of icebergs reported, and the limits of fog-belts to the westward of the fortieth meridian. In tracing the centres of the paths of these storms, data from the reports of two hundred and fifty-one vessels have been used. The most important storm of the month passed eastward from Newfoundland during the 23d, and advanced over the ocean, north of the trans-Atlantic tracks, to the British Isles by the 29th.

When compared with the average for corresponding months of previous years there was a deficiency in the aggregate quantity of ocean ice, reported for October, 1887. There was, also, a marked diminution in the number of fog-banks reported, when compared with reports received for September and the summer months.

The mean temperature of the month is decidedly below the normal in nearly all parts of the country east of the Rocky Mountains, the deficiencies being greatest in the Lake region, where they range from  $4^{\circ}$  to  $8^{\circ}$ . In the middle and south Pacific coast regions the month was much warmer than usual for October. In northern California the mean temperature ranges from  $4^{\circ}$  to  $10^{\circ}$  above the normal.

The precipitation was excessive in the south Atlantic and east Gulf states; also over several comparatively small areas to the west of the Mississippi, but over the greater part of the country it was deficient, the rainfall in the central valleys being decidedly below the average.

Under the heading "Drought" will be found a table showing the average precipitation in the various districts for the first ten months of the year, with the normals for the corresponding period of former years. It will be seen that thus far the rainfall of 1887 is below the normal in a majority of the districts of the country.

In the preparation of this REVIEW the following data, received up to November 20, 1887, have been used, viz., the regular tri-daily weather-charts, containing data of simultaneous observations taken at 133 Signal Service stations and 22 Canadian stations, as telegraphed to this office; 174 monthly journals and 176 monthly means from the former and 22 monthly means from the latter; 268 monthly registers from voluntary observers; 59 monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, New England, New Jersey, Ohio, Oregon, Pennsylvania, South Carolina, and Tennessee; and the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

### ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean pressure for October, 1887, determined from the tri-daily telegraphic observations of the Signal Service, is shown by isobarometric lines on chart ii.

The mean pressure for the month is greatest in the northern plateau and north Pacific coast regions, the area of barometric maxima being inclosed by the isobar of 30.15. Within this area a number of stations report mean pressures of 30.18—the maximum for the month. Over the Gulf of Saint Lawrence, southern Florida, and southwestern Arizona, the pressure is slightly below 29.9—the lowest monthly mean reported being 29.84, at Yuma, Ariz. The monthly barometric means range between 30.0 and 30.1 over nearly the whole country, the exceptions being a narrow area extending from Lake Superior eastward to the Atlantic coast, along the southwestern border from western Texas to the Pacific, and in Florida and along the east Gulf coast. The difference between the highest and lowest monthly means reported is .34, which is about the same as the range for the preceding month.

The mean pressure, as compared with that for the preceding month, shows an increase in all districts west of the Mississippi; an increase also occurs in Illinois and Indiana and thence southward to the Gulf coast. The excess over much the greater part of the region mentioned ranges from .05 to .19, the maximum departures occurring in the northern and middle plateau districts. Along the Atlantic coast, and in the Lake region

and Saint Lawrence Valley, the mean pressure is below that for the preceding month, the deficiencies generally ranging from .04 to .08 along the Atlantic coast, and from .08 to .14 in the Lake region.

The departures from the normal October pressure for the various stations are given in the tables of miscellaneous meteorological data; they are also graphically exhibited on chart iii by lines connecting stations of normal or equal abnormal values. From the latter it is shown that the deficiencies occur in southern Arizona and California, and in all districts east of the Mississippi River. The deficiencies in Arizona and California are very slight, not exceeding .04, but in some districts east of the Mississippi they are quite marked, New England and the Canadian Maritime Provinces showing maximum deficiencies ranging from .10 to .13. To the westward of the Mississippi the mean pressure is everywhere above the normal, except in California and southern Arizona, the excess ranging from .10 to .15 in the northern plateau and north Pacific coast regions.

### BAROMETRIC RANGES.

The monthly barometric ranges at the various Signal Service stations are also given in the tables of miscellaneous meteorological data. To the eastward of the one hundredth meridian the ranges for this month conform, as usual, to the general rule, that is, they increase with the latitude and decrease